

# ***Zeuxine clandestina* (Orchidaceae), a rare orchid from West Bengal, India<sup>a</sup>**

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**Key words/mots clés:** Buxa National Park, New report, *Zeuxine flava*, *Zeuxine gracilis*.

## **Abstract**

*Zeuxine clandestina* Blume (Orchidaceae), a rare terrestrial orchid known in India by sparse populations in Arunachal Pradesh and by uncertain presence in Assam, is reported for the first time from Buxa National Park, West Bengal. With very few specimens in Indian herbaria for comparison, a detailed description complemented by a photo-plate and notes is provided to facilitate its identification in future exploration surveys.

## **Résumé**

***Zeuxine clandestina* (Orchidaceae), une orchidée rare du Bengale occidental, Inde –** *Zeuxine clandestina* Blume, une orchidée terrestre rare connue en Inde par des populations éparses dans Arunachal Pradesh et par une présence incertaine en Assam, est enregistrée pour la première fois dans le Parc National Buxa, Bengale occidental. Avec très peu de spécimens dans les herbiers indiens pour permettre la comparaison, une description détaillée, accompagnée d'une planche photographique et de notes, est proposée afin de faciliter son identification lors d'explorations futures.

## **Introduction**

The members of the genus *Zeuxine* Lindley are predominantly terrestrial, characterized by fleshy roots, soft herbaceous leaves, 1-many flowered

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terminal raceme with resupinate flowers, mostly 2-lobed (rarely entire) labellum-epichile, 2 lateral stigma lobes in column and pollinarium with sextile pollinia, semi-transparent tegula and a terminal viscidium. The genus is represented by about 80 species (Chen *et al.*, 2009) distributed from Tropical Africa to Central Asia and West Pacific (Govaerts *et al.*, 2010). In India, eighteen species of *Zeuxine* have been reported (Bhattacharjee & Sabapathy, 2010). One of the authors (GK) collected a few specimens of a terrestrial orchid from a single population during floral documentation of Buxa National Park, Jalpaiguri, West Bengal, India. These specimens on critical study have been identified as *Zeuxine clandestina* Blume, a species hitherto unknown to West Bengal.

*Z. clandestina* closely resembles *Z. gracilis* (Breda) Blume and *Z. flava* (Wallich ex Lindley) Trimen. However, these three species of *Zeuxine* can be distinguished by the characters presented in the following key.

1a. Petals obliquely oblong-elliptic or oblong-rectangular; lobes of epichile 2-3 mm long, slightly dilated at apex; tegula of pollinarium oblong-elliptic or elliptic-orbicular ..... 2

1b. Petals obliquely linear-oblong; lobes of epichile 0.6 – 1.1 mm long, slightly contracted at apex; tegula of pollinarium linear-oblong to narrowly ovate-oblong ..... *Z. clandestina*

2a. Petals obliquely oblong-elliptic; labellum white with bright yellow to orange-yellow base; appendages inside hypochile filiform ..... *Z. gracilis*

2b Petals obliquely oblong-rectangular; labellum bright yellow to dull orange-yellow and occasionally with pale yellowish-white base (rarely with dull pink base), appendages inside hypochile oblong-obconical .....  
..... *Z. flava*

***Zeuxine clandestina* Blume**, *Collection des Orchidées le plus remarquables de l'Archipel Indien et du Japon*: 70. t. 39, fig. 4, 1858 (1859); Seidenfaden in *Dansk Botanisk Arkiv* 32(2): 87, t. 54, 1978; A.N. Rao in *Indian Forester* 122(12): 1171. 1996; S. Misra, *Orchids of India*: 320, 2007.

Type: Java, A. Waitz s.n. (holotype: L, photo!)

Description: terrestrial herbs, 10-25 cm tall. Rhizome creeping, terete, pale brownish to yellowish-green, rooting at nodes. Roots fleshy, pale brown, with minute root-hairs. Stem terete, erect, unbranched, 5-10 cm long, 2-5 mm thick, glabrous, occasionally with 1-3 membranous sheaths formed by withered leaf-bases. Leaves 4-7, scattered along stem, sometimes crowded towards apex, glabrous; petioles 2-5 mm long, sheathing at base; lamina ovate to ovate-lanceolate, 12-35 × 9-25 mm, occasionally oblique, obtuse at base, acute at apex, green with obscure reticulations when young, 3-veined. Inflorescence a terminal raceme, laxly 6 to many flowered, pale brown, pubescent; peduncle up to 12 cm long, with 2-4 sheathing bracts; sheathing bracts lanceolate, 10-16 mm long, long-acuminate at apex, pubescent, 1-veined; rachis up to 10 cm long. Floral bracts ovate-lanceolate, 4.5-8 × 1.5-2.2 mm, acuminate at apex, pale pinkish-white, shorter or slightly longer or as long as pedicel plus ovary, pubescent, with one distinct mid-vein and two obscure lateral veins. Flowers 6-10 mm long, resupinate. Sepals free, pale green to brownish-green, pubescent, sub-acute to obtuse at apex, with 1 distinct mid-vein and 2 incomplete obscure lateral veins; dorsal one ovate, 2.5-4 × 1.5-2.2 mm, adnate to petals forming a hood on column; lateral ones ovate, 2.5-4 × 1.5-2.2 mm, occasionally slightly oblique. Petals obliquely linear-oblong, 2.9-3.8 × 0.8-1.1 mm (at widest portion), acute at apex, pale white, glabrous, 2-veined, one extending to tip and the other not. Labellum 3-lobed, 2.4-3.2 mm long, pale lemon-yellow to yellowish-white or rarely white, base with pale pinkish-white to pale greenish to greyish tinge; hypochile saccate, 0.9-1.1 × 1-1.2 mm, with 1 narrowly oblong-filiform curved appendage on either side; mesochile oblong-squarish, 0.6-1 × 0.6-1 mm, incurved in margins; epichile 2-lobed, lobes sub-squarish, 0.6-1.1 × 0.5-0.9 mm, sub-truncate at apex, divergent, often with a minute sinus in between. Column 1-1.5 mm long, pale white to pale pinkish-white, without true wings but with a seam with upward tongues which appear as small wing-like projections below rostellum; rostellum bifid, arms 0.5-0.7 mm long, projecting, sub-acute at apex. Stigma 2-lobed, lobes elliptic-orbicular, well separated, sub-lateral. Anther-cap oblong-ovate, 1.3-1.8 × 0.4-0.7 mm, white with reddish tinge; pollinarium 1.5-2 mm long, pale yellow; pollinia 2, narrowly oblong-ovate to obclavate, 0.9-1.2 mm

caudicles linear-oblong, 0.3-0.4 mm long; tegula linear-oblong to ovate-oblong, about  $1 \times 0.25$  mm, pale mustard yellow, semi-transparent; viscidium narrowly oblong-elliptic, about  $0.75 \times 0.2$  mm. Ovary including pedicel elliptic-oblong to terete,  $4-8 \times 1-2$  mm, twisted, green, laxly pubescent to nearly glabrous.

See Fig. 1 and 2.

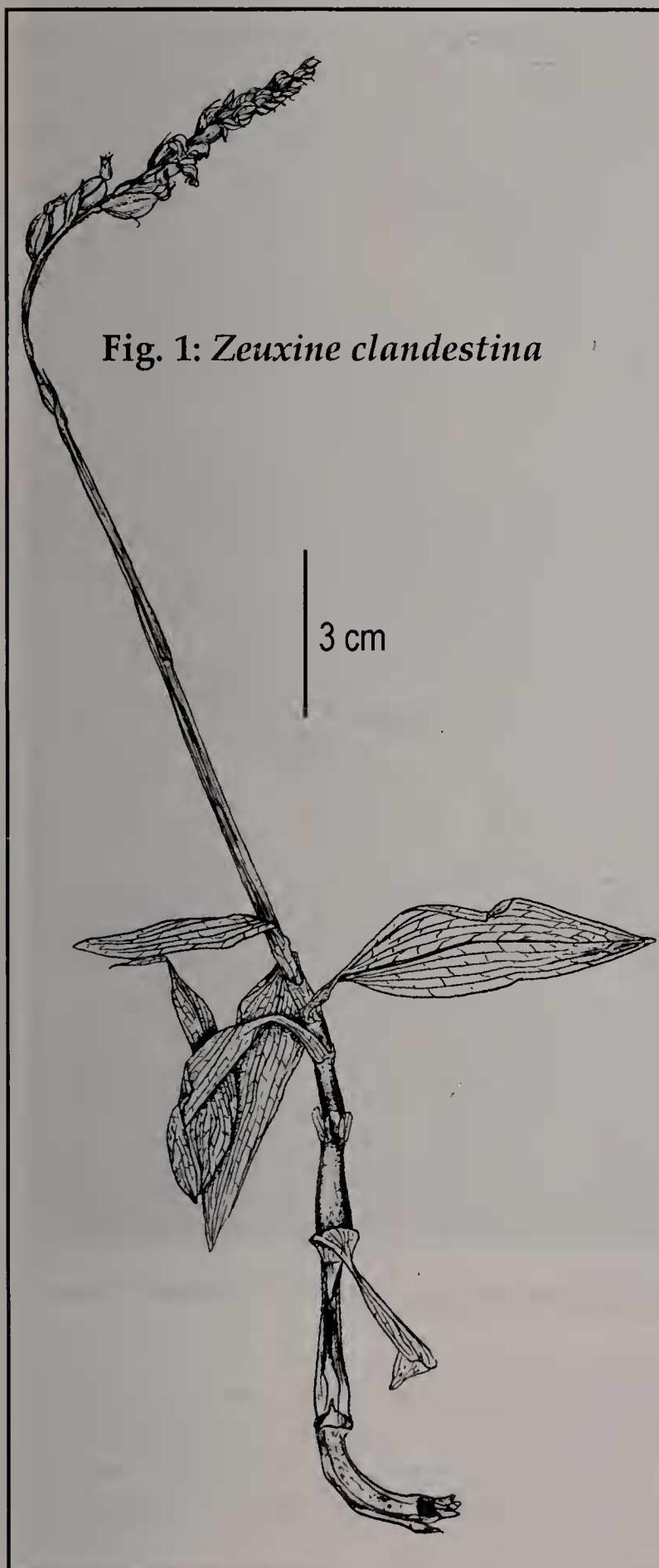


Fig. 1: *Zeuxine clandestina*

Flowering: March-April; fruiting: November-December (fide Barua, 2001).

Habitat: the species was found growing on humus rich forest floor, shaded by large trees and associated with *Zeuxine nervosa* (Wallich ex Lindley) Bentham ex Trimen and *Hemiorchis pantlingii* King.

Distribution: India: Arunachal Pradesh, Assam (fide Barua, 2001), West Bengal; Indonesia, Malaysia and Thailand.

Specimens examined: India: Arunachal Pradesh, Changlang District, Namdapha National Park, Moti Jheel, 20.03.1996, A.N. Rao 28265, 28337 (Orchid Herbarium Tipi); West Bengal, Jalpaiguri District, Buxa National Park, 137 m, Gopal Krishna & Party 50501 (CAL; Barcode nos. CAL0000007215, 16, 17).

Note: Rao (1988) reported *Z. clandestina* from India based on a specimen collected by Vajravelu

from Palghat District, Kerala (*E. Vajravelu* 59101, MH) which is in fact *Z. gracilis*. However, Rao (1996) collected the true *Z. clandestina* from Namdapha National Park, Arunachal Pradesh. Two plants of *Z. clandestina* were found by one of the authors (AB) at Sessa Orchid Sanctuary, West Kameng District in April, 2006. Barua's report of the species from Assam is highly doubtful as the description, illustration and phenology provided by him correspond more to the description of *Z. membranacea* Lindley than that of *Z. clandestina*. The species is poorly represented in Indian herbaria with less than ten specimens. Its distribution should be thoroughly surveyed in all north eastern states as it is now known to occur in widely dispersed states of Arunachal Pradesh and West Bengal and its status is to be ascertained gathering data in the defined IUCN revised guidelines (2001). Simultaneously, there should be an effort to conserve the species by nurturing it in the gardens maintained by Botanical Survey of India Regional Centres at Itanagar, Shillong and Gangtok.

## Acknowledgements

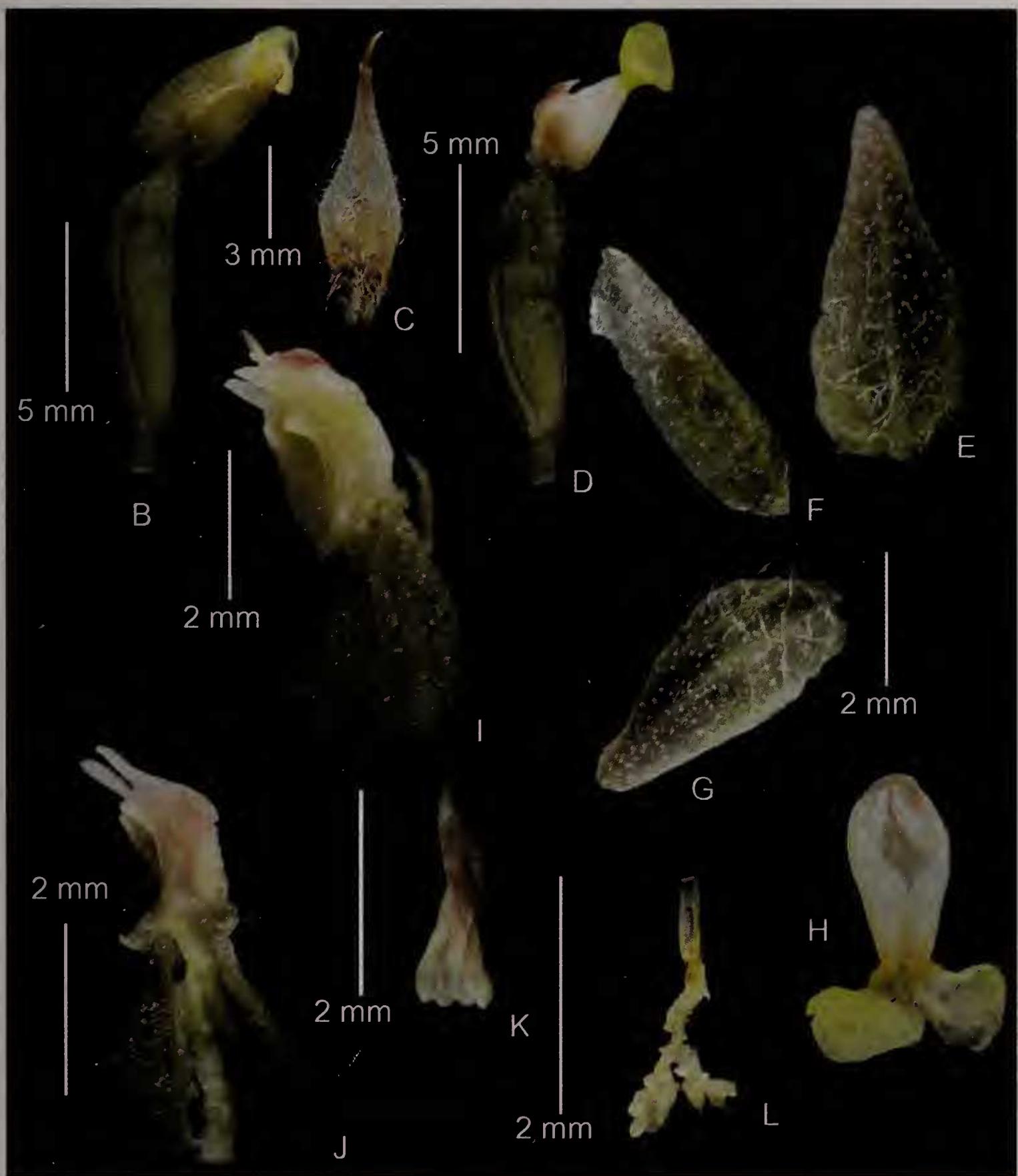
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**Fig. 2. *Zeuxine clandestina***

B. Flower; C. Bract; D. Flower showing column and labellum (sepals and petals removed); E. Dorsal sepal; F. A petal; G. A lateral sepal; H. labellum; I. Column with portion of ovary (anther attached); J. Column with portion of ovary (anther removed); K. Anther-cap; L. Pollinarium. [Gopal Krishna & Party 50501, CAL; B – L from specimen kept in 70% alcohol for a week]

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**L**es membres du genre *Zeuxine* sont principalement terrestres et caractérisés par des racines charnues, des feuilles herbacées, un racème terminal portant 1-plusieurs fleurs résupinées, un labelle à épichile le plus souvent bilobé, rarement entier, deux lobes stigmatiques, des pollinies sectiles, une tegula transparente et un viscidium terminal. Les 80 espèces du genre sont distribuées depuis l'Afrique tropicale jusqu'à l'Asie centrale et le Pacifique ouest. L'un des auteurs a collecté quelques spécimens de *Z. clandestina* dans une population unique trouvée dans le Parc national Buxa, Jalpaiguri, Bengale occidental (où cette espèce n'avait jamais été répertoriée). Elle ressemble à *Z. bracilis* et *Z. flava*. La clé ci-dessous permet de les distinguer.

1. Pétales obliquement oblongs-rectangulaires ; lobes de l'épichile longs de 2-3 mm, un peu dilatés à l'apex ; téquila oblong-elliptique ou elliptique-orbiculaire ..... 2
- 1a. Pétales obliquement linéaires-oblongs ; lobes de l'épichile longs de 0,6-1,1 mm, un peu contractés à l'apex ; téquila linéaire-oblongue à étroitement ovale-oblongue ..... *Z. clandestina*

2. Pétales obliquement oblongs-elliptiques ; labelle blanc avec une base jaune vif à jaune orange ; appendices de l'intérieur de l'hypochile filiformes ..... *Z. gracilis*  
 2a. Pétales obliquement oblongs-rectangulaires ; labelle jaune vif à jaune orange terne et parfois avec une base blanc jaunâtre pâle (rarement rose terne) ; appendices de l'hypochile oblongs-obconiques ..... *Z. flava*  
 Notes : en 1988, Rao a répertorié *Zeuxine clandestina* pour l'Inde sur la base d'un spécimen collecté par Vajravelu dans le District Palghat, Kerala. Ce spécimen est en fait *Z. gracilis*. Toutefois, en 1996, Rao a collecté le vrai *Z. clandestina* dans le Parc National Namdapha, Arunachal Pradesh. Deux plantes de *Z. clandestina* ont été trouvées par l'un des auteurs dans le Sanctuaire d'orchidées Sessa, District Kameng Ouest, en avril 2006. La citation de cette espèce par Barua dans l'Assam est fortement douteuse car la description, l'illustration et la phénologie qu'il fournit correspondent davantage à *Z. membranacea*. L'espèce est faiblement représentée dans les herbiers indiens, avec moins de dix collectes. Sa distribution devrait être sérieusement surveillée dans tous les Etats du nord-est car on sait maintenant qu'elle se rencontre de manière très dispersée dans les Etats Arunachal Pradesh et Bengale occidental. Son statut est à confirmer par des collectes de données conformément aux directives de l'IUCN (2001). En parallèle, un effort de conservation devrait être consenti en entretenant cette espèce dans les Centres régionaux du Botanical Survey of India, à Itanagar, Shillong et Gangtok.

Fig. 1: drawing by D.K. Sah

Fig. 2: ph. Avishek Bhattacharjee

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